

AMENDMENTS TO THE CLAIMS:

1. (Currently amended) A voltage generating apparatus comprising:
 - an input terminal;
 - an output terminal;
 - a first offset voltage generating element connected to said input terminal;
 - a slow discharging amplifier having an input, connected between to said input terminal to receive input voltage therefrom, and having an output;~~said output terminal;~~
 - a rapid charging amplifier having an input, connected between said input terminal to said first offset voltage generating element so that the input voltage applied to said slow discharging amplifier is higher than an input voltage applied to said rapid charging amplifier, and having an output; ~~said output terminal;~~ and
 - a current suppressing resistor coupling the output of said slow discharging amplifier to the output of said rapid charging amplifier,
 - wherein the output of one of said slow discharging amplifier and said rapid charging amplifier is connected directly to said output terminal.
 - ~~a first offset voltage generating element connected between said input terminal and~~
~~one of said slow discharging amplifier and said rapid charging amplifier, so that an input~~
~~voltage applied to said slow discharging amplifier is higher than an input voltage applied to~~
~~said rapid charging amplifier.~~
2. (Canceled)

3. (Currently amended) The voltage generating apparatus as set forth in claim 1, wherein said slow discharging amplifier comprises a first single-end output circuit ~~along with~~ and an oscillation avoiding capacitor, and said rapid charging amplifier comprises a second single-end output circuit without an oscillation avoiding capacitor.

4. (Original) The voltage generating apparatus as set forth in claim 1, further comprising:

a rapid discharging amplifier connected between said input terminal and said output terminal; and

a second offset voltage generating element connected between said input terminal and one of said slow discharging amplifier and said rapid discharging amplifier, so that the input voltage applied to said slow discharging amplifier is lower than an input voltage applied to said rapid discharging amplifier.

5. (Currently amended) The voltage generating apparatus as set forth in claim 4, wherein said slow discharging amplifier comprises a first single-end output circuit and an oscillation avoiding capacitor, said rapid charging amplifier comprises a second single-end output circuit without an oscillation avoiding capacitor, and said rapid discharging amplifier comprises a third single-end output circuit without an oscillation avoiding capacitor.

6. (Currently amended) The voltage generating apparatus as set forth in claim 4,

wherein said rapid discharging amplifier and said slow discharging amplifier ~~are constructed~~
~~by~~ comprise a single discharging amplifier, ~~said single discharging amplifier including~~
~~amplifier and~~ switches controlled by control signals, so that said single discharging amplifier
serves as said rapid discharging amplifier when said control signals are in a first mode and
said single discharging amplifier serves as said slow discharging amplifier when said control
signals are in a second mode.

7. (Currently amended) The voltage generating apparatus as set forth in ~~claim 4,~~
~~wherein claim 6, wherein~~ said second offset voltage generating element is incorporated into
said single discharging amplifier.

8. (Currently amended) The voltage generating apparatus as set forth in claim 4, further
comprising:

a first switch connected between said slow discharging amplifier and said output
terminal;

a second switch connected between said rapid discharging amplifier and said output
terminal; and

a third switch connected between said rapid charging amplifier and said output
terminal,

wherein said first, second and third switches ~~being~~ are controlled so that said slow
discharging amplifier, said rapid discharging amplifier and said rapid charging amplifier are
selectively activated.

9. (Currently amended) A voltage generating apparatus comprising:

an input terminal;

an output terminal;

a first offset voltage generating element connected to said input terminal;

a rapid discharging amplifier having an input, connected between to said input terminal to receive input voltage therefrom, and having an output; ~~said output terminal;~~

a slow charging amplifier having an input, connected between said input terminal to said first offset voltage generating element so that the input voltage applied to said rapid discharging amplifier is higher than an input voltage applied to said slow charging amplifier, and having an output; ~~said output terminal;~~ and

a current suppressing resistor coupling the output of said rapid discharging amplifier to the output of said slow charging amplifier,

wherein the output of one of said rapid discharging amplifier and said slow charging amplifier is connected directly to said output terminal.

~~a first offset voltage generating element connected between said input terminal and one of said rapid discharging amplifier and said slow charging amplifier, so that an input voltage applied to said rapid discharging amplifier is higher than an input voltage applied to said slow charging amplifier.~~

10. (Canceled)

11. (Currently amended) The voltage generating apparatus as set forth in claim 9, wherein said rapid ~~charging~~ discharging amplifier comprises a first single-end output circuit without an oscillation avoiding capacitor, and said slow charging amplifier comprises a second single-end output circuit ~~along with~~ and an oscillation avoiding capacitor.

12. (Original) The voltage generating apparatus as set forth in claim 9, further comprising:

a rapid charging amplifier connected between said input terminal and said output terminal; and

a second offset voltage generating element connected between said input terminal and one of said slow charging amplifier and said rapid charging amplifier, so that the input voltage applied to said slow charging amplifier is higher than an input voltage applied to said rapid charging amplifier.

13. (Currently amended) The voltage generating apparatus as set forth in claim 12, wherein said rapid discharging amplifier comprises a first single-end output circuit without an oscillation avoiding capacitor, said slow charging amplifier comprises a second single-end output circuit and an oscillation avoiding capacitor, and said rapid charging amplifier comprises a third single-end output circuit without an oscillation avoiding capacitor.

14. (Currently amended) The voltage generating apparatus as set forth in claim 12, wherein said rapid charging amplifier and said slow charging amplifier ~~are constructed by~~

comprise a single charging ~~amplifier, said single charging amplifier including amplifier and~~ switches controlled by control signals, so that said single charging amplifier serves as said rapid charging amplifier when said control signals are in a first mode and said single charging amplifier serves as said slow charging amplifier when said control signals are in a second mode.

15. (Currently amended) The voltage generating apparatus as set forth in claim ~~12~~ 14, wherein said second offset voltage generating element is incorporated into said single charging amplifier.

16. (Currently amended) The voltage generating apparatus as set forth in claim 12, further comprising:

a first switch connected between said slow charging amplifier and said output terminal;

a second switch connected between said rapid discharging amplifier and said output terminal; and

a third switch connected between said rapid charging amplifier and said output terminal;

wherein said first, second and third switches ~~being~~ are controlled so that said slow charging amplifier, said rapid discharging amplifier and said rapid charging amplifier are selectively activated.

17. (Original) A voltage generating apparatus comprising:

an input terminal;

an output terminal;

a rapid discharging amplifier connected between said input terminal and said output terminal;

a slow discharging amplifier connected between said input terminal and said output terminal;

a rapid charging amplifier connected between said input terminal and said output terminal;

a first offset voltage generating element connected between said input terminal and one of said rapid discharging amplifier and said slow discharging amplifier, so that an input voltage applied to said rapid discharging amplifier is higher than an input voltage applied to said slow discharging amplifier; and

a second offset voltage generating element connected between said input terminal and one of said slow discharging amplifier and said rapid charging amplifier, so that the input voltage applied to said slow discharging amplifier is higher than an input voltage applied to said rapid charging amplifier.

18. (Original) A voltage generating apparatus comprising:

an input terminal;

an output terminal;

a rapid discharging amplifier connected between said input terminal and said output

terminal;

a slow charging amplifier connected between said input terminal and said output terminal;

a rapid charging amplifier connected between said input terminal and said output terminal;

a first offset voltage generating element connected between said input terminal and one of said rapid discharging amplifier and said slow charging amplifier, so that an input voltage applied to said rapid discharging amplifier is higher than an input voltage applied to said slow charging amplifier; and

a second offset voltage generating element connected between said input terminal and one of said slow charging amplifier and said rapid charging amplifier, so that the input voltage applied to said slow charging amplifier is higher than an input voltage applied to said rapid charging amplifier.

19. (New) The voltage generating apparatus as set forth in claim 17, wherein said rapid discharging amplifier comprises a first single-end output circuit without an oscillation avoiding capacitor, said slow discharging amplifier comprises a second single-end output circuit and an oscillation avoiding capacitor, and said rapid charging amplifier comprises a third single-end output circuit without an oscillation avoiding capacitor.

20. (New) The voltage generating apparatus as set forth in claim 17, wherein said rapid discharging amplifier and said slow discharging amplifier comprise a single discharging

amplifier and switches controlled by control signals, so that said single discharging amplifier serves as said rapid discharging amplifier when said control signals are in a first mode and said single discharging amplifier serves as said slow discharging amplifier when said control signals are in a second mode.

21. (New) The voltage generating apparatus as set forth in claim 20, wherein said second offset voltage generating element is incorporated into said single discharging amplifier.

22. (New) The voltage generating apparatus as set forth in claim 17, further comprising:
a first switch connected between said rapid discharging amplifier and said output terminal;

a second switch connected between said slow discharging amplifier and said output terminal; and

a third switch connected between said rapid charging amplifier and said output terminal,

wherein said first, second and third switches are controlled so that said slow discharging amplifier, said rapid discharging amplifier and said rapid charging amplifier are selectively activated.

23. (New) The voltage generating apparatus as set forth in claim 18, wherein said rapid discharging amplifier comprises a first single-end output circuit without an oscillation avoiding capacitor, said slow charging amplifier comprises a second single-end output circuit

and an oscillation avoiding capacitor, and said rapid charging amplifier comprises a third single-end output circuit without an oscillation avoiding capacitor.

24. (New) The voltage generating apparatus as set forth in claim 18, wherein said rapid charging amplifier and said slow charging amplifier comprise a single charging amplifier and switches controlled by control signals, so that said single charging amplifier serves as said rapid charging amplifier when said control signals are in a first mode and said single charging amplifier serves as said slow charging amplifier when said control signals are in a second mode.

25. (New) The voltage generating apparatus as set forth in claim 24, wherein said second offset voltage generating element is incorporated into said single charging amplifier.

26. (New) The voltage generating apparatus as set forth in claim 18, further comprising:

a first switch connected between said rapid discharging amplifier and said output terminal;

a second switch connected between said slow charging amplifier and said output terminal; and

a third switch connected between said rapid charging amplifier and said output terminal;

wherein said first, second and third switches are controlled so that said slow charging amplifier, said rapid discharging amplifier and said rapid charging amplifier are

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selectively activated.